

Application No. 09/680,122
Amendment "D" dated July 7, 2005
Reply to Office Action mailed June 6, 2005

AMENDMENTS TO THE CLAIMS

The listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) In a network system including a server system, a client system, and one or more other network devices, wherein the server system monitors the occurrence of events, sends notification data to the client system, when notification has been requested, after one of the monitored events occurs, and may have client data requiring transmission to the client system, a method for efficiently sending notification to the client system when the event has occurred, so as to preserve the processing capacity of the server system and the client system, and so as to preserve bandwidth on the network system, the method comprising:

an act of the server system determining that a notification is to be sent to the client system upon the occurrence of one of the monitored events;

an act of the server system sending notification data using a connectionless protocol to the client system, if one of the monitored events occurs;

an act of determining if the server system has client data to transmit to the client system and upon determining that the server system has client data to transmit, the server system attempting to receive contact from initiating contact with the client device using a connection-oriented protocol when the server system has client data to transmit to the client system; and

an act of the server system transmitting the client data to the client system using exclusively the connection-oriented protocol to transmit the client data, after the server system receives contact using the connection-oriented protocol, and without first attempting to transmit the client data to the client using the connectionless protocol.

2. (Original) A method as recited in claim 1 wherein the server system determines that a notification is to be sent to the client system by receiving a message from the client system.

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3. (Original) A method as recited in claim 1 wherein the server system monitors for the occurrence of events by executing separate modules to monitor individual events.

4. (Original) A method as recited in claim 1 wherein in the connectionless protocol is User Datagram Protocol.

5. (Original) A method as recited in claim 1 wherein the notification data further comprises data that notifies the client system that the server has additional data associated with the occurrence of the event.

6. (Original) A method as recited in claim 1 wherein the connection-oriented protocol is Transmission Control Protocol.

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7. (Currently Amended) In a network system including a server system, a client system, and one or more other network devices, wherein the server system monitors the occurrence of events, sends notification data to the client system, when notification has been requested, after one of the monitored events occurs, and may have client data requiring transmission to the client system, a method for efficiently sending notification to the client system when the event has occurred, so as to preserve the processing capacity of the server system and the client system, and so as to preserve bandwidth on the network system, the method comprising:

an act of the server system determining that a notification is to be sent to the client system upon the occurrence of one of the monitored events;

an act of the server system sending notification data using a connectionless protocol to the client system, if one of the monitored events occurs;

an act of determining if the server system has client data to transmit to the client system; and

upon determining that the server system has client data to transmit, a step for sending client data, after the notification data is sent, to the client system using exclusively a connection-oriented protocol, and such that the client data is sent to the client system using the connection-oriented protocol without first attempting to transmit the client data to the client using the connectionless protocol.

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8. (Currently Amended) A computer program product for implementing, in a network system including a server system, a client system, and one or more other network devices, wherein the server system monitors the occurrence of events, sends notification data to the client system, when notification has been requested, after one of the monitored events occurs, and may have client data requiring transmission to the client system, a method for efficiently sending notification to the client system when the event has occurred, so as to preserve the processing capacity of the server system and the client system, and so as to preserve bandwidth on the network system, the computer product comprising:

a computer-readable medium carrying computer-executable instructions that, when executed at the server system, cause the server system to perform the following:

an act of the server system determining that a notification is to be sent to the client system upon the occurrence of one of the monitored events;

an act of the server system sending notification data using a connectionless protocol to the client system, if one of the monitored events occurs;

an act of determining if the server system has client data to transmit to the client system and upon determining that the server system has client data to transmit, the server system attempting to receive contact from initiating contact with the client device using a connection-oriented protocol when the server system has client data to transmit to the client system; and

an act of the server system transmitting the client data to the client system using exclusively the connection-oriented protocol to transmit the client data, after the server system receives contact using the connection-oriented protocol, and without first attempting to transmit the client data to the client using the connectionless protocol.

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9. (Currently Amended) A computer program product for implementing, in a network system including a server system, a client system, and one or more other network devices, wherein the server system monitors the occurrence of events, sends notification data to the client system, when notification has been requested, after one of the monitored events occurs, and may have client data requiring transmission to the client system, a method for efficiently sending notification to the client system when the event has occurred, so as to preserve the processing capacity of the server system and the client system, and so as to preserve bandwidth on the network system, the computer product comprising:

a computer-readable medium carrying computer-executable instructions that, when executed at the server system, cause the server system to perform the following:

an act of the server system determining that a notification is to be sent to the client system upon the occurrence of one of the monitored events;

an act of the server system sending notification data using a connectionless protocol to the client system, if one of the monitored events occurs;

an act of determining if the server system has client data to transmit to the client system; and

upon determining that the server system has client data to transmit, a step for sending client data, after the notification data is sent, to the client system using exclusively a connection-oriented protocol, and such that the client data is sent to the client system using the connection-oriented protocol without first attempting to transmit the client data to the client using the connectionless protocol.

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10. (Currently Amended) A method as recited in claim 1, the method further comprising: ~~In a network system including a server system and a client system, wherein the server system monitors the occurrence of events and sends notification data to the client system when one of the monitored events occurs and wherein the client system attempts to establish a communication link to the server system using a connection-oriented protocol, after the client system receives event notification from the server system, when the server system needs to send additional data to the client system, a method for the server system to repeatedly attempt notification of the client system so as to preserve the processing capacity of the server system and the client system, and so as to preserve bandwidth on the network system, the method comprising:~~

~~an act of the server system determining that a notification is to be sent to the client system upon the occurrence of one of the monitored events; an act of the server system sending notification data to the client system using a connectionless protocol to notify the client system of the occurrence of a monitored;~~

~~an act of the server system resending the notification data a plurality of times using a the connectionless protocol to the client system at time intervals which, at least for a time, increase after each failure to detect the establishment of a communication link using a the connection-oriented protocol from the client system, wherein the resending occurs until a communication link using a connection-oriented protocol is established from the client system or until a timeout period has elapsed; and~~

~~wherein an act of the server system sends sending the additional data to the client system if once a the communication link using a the connection-oriented protocol is established.~~

11-13. (Cancelled).

14. (Original) A method as recited in claim 10, wherein the time interval doubles after each successive failure to establish communication.

15-16. (Cancelled).

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17. (Currently Amended) A computer program product as recited in claim 8, wherein the method further comprises: ~~for implementing, in a network system including a server system and a client system, wherein the server system monitors the occurrence of events and sends notification data to the client system when one of the monitored events occurs and wherein the client system establishes a communication link to the server system using a connection oriented protocol, after the client system receives event notification from the server system, when the server system needs to send additional data to the client system, a method for the server system to repeatedly attempt notification of the client system so as to preserve the processing capacity of the server system and the client system, and so as to preserve bandwidth on the network system, the computer product comprising:~~

~~a computer readable medium carrying computer executable instructions that, when executed at the server system, cause the server system to perform the following:~~

~~an act of determining that a notification is to be sent to the client system upon the occurrence of one of the monitored events;~~

~~an act of sending notification data the client system using a connectionless protocol to notify the client system of the occurrence of a monitored event and;~~

~~an act of resending the notification data a plurality of times using a-the connectionless protocol to the client system at time intervals which, at least for a time, increase after each failure to detect the establishment of a communication link using a-the connection-oriented protocol from the client system, wherein the resending occurs until a communication link using a-the connection-oriented protocol is established from the client system or until a timeout period has elapsed; and~~

~~an act of sending wherein the server system sends the additional data to the client system if once the communication link using a-the connection-oriented protocol is established.~~

18-19. (Cancelled).

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20. (Previously Presented) A method as recited in claim 24, further comprising:
the server system associating a separate storage location with the client system
and using the separate storage location to store data on the occurrence of each of the
multiple events; and
the server system appending to the separate storage location the occurrence of
each of the multiple events in order to save a record of the occurrence of each event until
sending the one notification to the client system indicating that the multiple events have
occurred.
21. (Previously Presented) A method as recited in claim 24, further comprising the
server system monitoring for the occurrence of the one or more events by executing separate
modules to monitor individual events.
22. (Previously Presented) A method as recited in claim 24 wherein the
connectionless protocol is User Datagram Protocol.
23. (Original) A method as recited in claim 22 wherein the simultaneous notification
comprises receipt of one User Datagram Protocol packet.
- 24-26. (Cancelled).

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27. (Currently Amended) In a network system including a server system and a client system, wherein the server system monitors the occurrence of events, sends notification to the client system when one of the monitored events occurs, and may have client data requiring transmission to the client system, a method for efficiently notifying applications associated with the client system when an event has occurred so as to preserve the processing capacity of server system and the client system, and so as to preserve bandwidth on the network system, the method comprising:

receiving, from one of a plurality of applications associated with the client system, a request to be notified of an occurrence of an event;

determining if the request to be notified of the occurrence of the event has been received previously, and if not sending the request to be notified of the occurrence of the event to the server system;

an act of the client system receiving one notification from the server system using a connectionless protocol notifying the client system of the occurrence of the event;

an act of the client system determining which of the plurality of applications requested notification of the occurrence of the event;

an act of the client system transmitting the received notification to each application that requested notification of the occurrence of the event;

the client system determining if the server system has additional client data associated with the occurrence of the event; and

the client system, in response to determining that the server system has additional client data associated with the occurrence of the event, creating a connection using a connection-oriented protocol to receive client data associated with the occurrence of the event, and without first receiving an attempt from the server to transmit the client data over the connectionless protocol.

28. (Canceled).

29. (Previously Presented) A method as recited in claim 27 wherein the client system comprises a module to detect the one or more of a plurality of applications.

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30. (Original) A method as recited in claim 29 wherein the act of transmitting the received notification to one or more of the plurality of applications comprises the module transmitting the received notification.

31. (Original) A method as recited in claim 27 wherein the connectionless protocol is the User Datagram Protocol.

32. (Original) A method as recited in claim 27 wherein the connection oriented protocol is Transmission Control Protocol.

33. (Canceled).

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34. (Currently Amended) A computer product claim for implementing, in a network system including a server system and a client system, wherein the server system monitors the occurrence of events, sends notification to the client system when one of the monitored events occurs, and may have client data requiring transmission to the client system, a method for efficiently notifying applications associated with the client system when an event has occurred so as to preserve the processing capacity of server system and the client system, and so as to preserve bandwidth on the network system, the computer product comprising:

a computer-readable medium carry computer executable-instructions that, when executed at the client computer, cause the client computer to perform the following:

receiving, from one of a plurality of applications associated with the client system, a request to be notified of an occurrence of an event;

determining if the request to be notified of the occurrence of the event has been received previously, and if not sending the request to be notified of the occurrence of the event to the server system;

an act of receiving one notification from the server system using a connectionless protocol notifying the client system of the occurrence of the event;

an act of the client system determining which of the plurality of applications requested notification of the occurrence of the event;

an act of the client system transmitting the received notification to each application that requested notification of the occurrence of the event;

the client system determining if the server system has additional client data associated with the occurrence of the event; and

the client system, in response to determining that the server system has additional client data associated with the occurrence of the event, creating a connection using a connection-oriented protocol to receive client data associated with the occurrence of the event, and without first receiving an attempt from the server to transmit the client data over the connectionless protocol.

35. (Canceled).